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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/206792

EXAMINER

ART UNIT

PAPER NUMBER

DATE MAILED:

11/07/95

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 8/4/95 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449.                 | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152.       |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474.     | 6. <input type="checkbox"/>   |

Part II SUMMARY OF ACTION

1. ☒ Claims 1, 3-20 are pending in the application.

Of the above, claims are withdrawn from consideration.

2. ☐ Claims have been cancelled.

3. ☐ Claims are allowed.

4. ☒ Claims 1, 3-20 are rejected.

5. ☐ Claims are objected to.

6. ☐ Claims are subject to restriction or election requirement.

7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed has been ☐ approved; ☐ disapproved (see explanation).

12. ☒ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☒ been received ☐ not been received ☐ been filed in parent application, serial no. ; filed on

13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

***Response to Amendment***

This Office action is responsive to the amendment filed on 8/4/1995. The rejection of the claims over patent number 4,507,371 still stands, however the rejection of the claims over the EP reference has been overcome.

Additionally, two new references are applied to the claims, thus this Office action is non-final.

***Claim Rejections - 35 USC § 103***

1. Claims 1, 3-4, 7-15 and 18-20 are rejected under 35 U.S.C. § 103 as being unpatentable over Thackeray et al. 4,507,371.

The instant claims are drawn to the same invention as originally presented claims.

Thackeray et al. '371 is applicable for the reasons of record. In that, it shows a spinel lithium manganese dioxide with stabilizing cations (col. 1, lines 11-24 and col. 2, lines 47-50). The anode and cathode may be made with the spinel material. The electrolyte may be one containing a lithium salt and a solvent (col. 5, lines 10-16). Moreover, specific anode and cathode materials are listed in col. 6, lines 1-20. The cathode may contain a lithium transition metal oxide.

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention

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was made because the artisan has sufficient skill to select the materials necessary for the voltage requirements needed.

The arguments presented by the Applicants in trying to overcome this rejection are not convincing. The assertion that the prior art does not suggest the type of cathode and type of battery is not on point. As discussed supra, the reference does indeed disclose the same battery system as that of the instant claims.

2. Claims 1, 3-4, 7-20 are rejected under 35 U.S.C. § 103 as being unpatentable over Thackeray 4,980,251.

The instant claims have been summarized supra.

Thackeray '251 teaches spinel compounds having the same structure as the spinel compounds of the instant claims (col. 2, lines 6-37). The spinel structure may comprise the anode and cathode (col. 2, lines 37-68). Moreover, the cathode may also be selected from a transition metal oxide material and an anode comprising a lithium or lithium alloy (col. 3, lines 25-44).

The reference does not specifically list the valence numbers, etc.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because the skilled artisan recognizes that the properties of the spinel material are a result of the type of metal inserted into the crystal structure.

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Moreover, the battery elements are seen as conventional and well known in the art, thus they are obvious.

3. Claims 1, 3-20 are rejected under 35 U.S.C. § 103 as being unpatentable over Thackeray 5,316,877.

Instant claims 5-6 claim specific spinel structures. Amongst them are  $\text{Li}_2\text{Mn}_4\text{O}_9$  and  $\text{Li}_4\text{Mn}_5\text{O}_{12}$ .

The reference teaches a spinel material having two of the claimed structures, i.e.  $\text{Li}_2\text{Mn}_4\text{O}_9$  and  $\text{Li}_4\text{Mn}_5\text{O}_{12}$ . (col. 1, lines 46-63). The materials for the electrodes and electrolyte are seen in the claims.

The reference does not explicitly state all the valence numbers, and characteristics of the materials.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because the skilled artisan recognizes that the valence of each elements depends on which elements are selected to make the crystal structure. Moreover, the artisan recognizes that the particulars of the cell are conventional in the art.

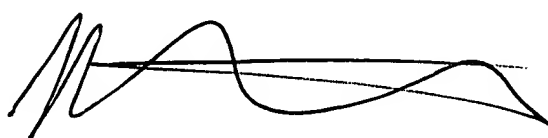
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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Nuzzolillo whose telephone number is (703) 305-3776. The Group Receptionist may be reached at (703) 308-0661. The group FAX number is (703) 305-3600.

M. Nuzzolillo  
Patent Examiner  
Art Unit 1111

A handwritten signature in black ink, appearing to be 'M. Nuzzolillo', written over a horizontal line.

M. N.  
November 7, 1995